PENDING CLAIMS AND STATUS THEREOF

1.   **(original)**   An apparatus for calculating and displaying 3D seismic classification features comprising: designation means for designating a path in a 3D volume; reference means for selecting a reference starting and ending position; a geo-operator calculated from the voxel data of said 3D volume, said geo-operator capable of having variable crossline, inline and vertical extent and having an orientation direction such that it can be maintained tangent to said path, as it traverses from the start point to the endpoint of said path; association means for associating horizontal (2D), vertical (2D) and arbitrary (3D) feature vectors with the geo-operator output; and determination means for determining where the geo-operator has sufficient data for the calculation to form a valid output; wherein the output of the geo-operator indicates a measure to which alternative prototypical feature tensors may be present along the path.

2.   **(original)**   A process for a device for calculating and displaying 3D seismic classification features relying on a means of designating a path in a 3D volume comprising: employing a geo-operator calculated from the voxel data of said 3D volume, said geo-operator capable of having variable crossline, inline and vertical extent and having a an orientation direction such that it can be maintained tangent to said path, as it traverses from the start point to the endpoint of said path; using an association means of associating horizontal (2D), vertical (2D) and arbitrary (3D) feature vectors with the output of said geo-operator; and with a determination means of determining where the geo-operator has sufficient data for the calculation to form a valid output; wherein the output of the geo-operator indicates a measure to which alternative prototypical feature tensors may be present along the path.

3.   **(original)**   An apparatus for calculating and displaying 3D seismic classification features comprising: a path in a 3D volume, the path having a reference start position and a reference end position; and a geo-operator capable of generating an output, the geo-operator comprising: an evaluation component that determines where the geo-operator has sufficient data to generate the output; wherein the output of the geo-operator indicates a measure to which alternative prototypical feature tensors may be present along the path.

4.   **(original)**   The apparatus of claim 3, wherein the feature vector is horizontal.

5.   **(original)**   The apparatus of claim 3, wherein the feature vector is vertical.

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6.   **(original)**   The apparatus of claim 3, wherein the feature vector is arbitrary.

7.   **(original)**   The apparatus of claim 3, wherein the feature vector is two dimensional.

8.   **(original)**   The apparatus of claim 3, wherein the feature vector is three dimensional.

9.   **(original)**   The apparatus of claim 3, wherein the geo-operator is calculated from voxel data of the 3D volume.

10.   **(original)**   The apparatus of claim 3, wherein the geo-operator has a variable crossline.

11.   **(original)**   The apparatus of claim 3, wherein the geo-operator has a variable inline.

12.   **(original)**   The apparatus of claim 3, wherein the geo-operator has a vertical extent.

13.   **(original)**   The apparatus of claim 3, wherein the geo-operator further comprises: an orientation direction constructed and arranged to be maintained tangent to the path from the start position to the end position.

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14.   **(original)**   The apparatus of claim 3, wherein the geo-operator further comprises: one or more feature vectors that are associated with the output of the geo-operator.

15.   **(original)**   A method for calculating and displaying 3D seismic classification features along a path having a startpoint and an endpoint, comprising: employing a geo-operator that is calculated from voxel data of the 3D volume, the geo-operator capable of having variable crossline, inline and vertical extent and having an orientation direction that is maintained tangent to the path as the path is traversed from the startpoint to the endpoint, the geo-operator generating output along the path; determining where the geo-operator has sufficient data to generate the output; generating output with the geo-operator; and associating horizontal, vertical and arbitrary feature vectors with the output of the geo-operator; wherein the output of the geo-operator indicates a measure to which alternative prototypical feature tensors may be present along the path.

Claims 16-67 canceled.